

15¢

\$5.50 A YEAR

May 9, 1959

VOL. 75 NO. 19

PAGES 289-304

SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Academy Gift

See Page 295

A SCIENCE SERVICE PUBLICATION

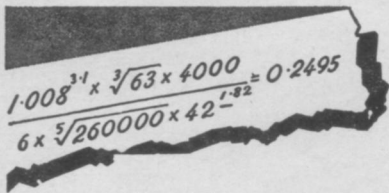
COSMOTRON

- MINIATURE ATOM SMASHER
- PRODUCES 75,000 VOLTS
- ABSOLUTELY SAFE



In no sense of the word a toy or a gadget. The COSMOTRON is a scientific instrument capable of producing 75,000 volts—makes sparks up to 2" long—yet is absolutely safe because the current is infinitesimal. The science teacher—science lover—or hobbyist can perform experiments to astound students—friends—family. Makes smoke disappear—defy gravity—turns propellers at a distance—transforms atomic energy into light—makes artificial lightning—smashes atoms—demonstrates ionic space ship drive—and many other experiments. Constructed of the finest materials. Will do exactly—for instruction purposes—what generators that cost 3 to 10 times more will do. The perfect device to teach the secrets of atomic physics and electricity. Will hold an audience spellbound as it performs trick after amazing trick. Includes an experiment kit and illustrated experiment manual. Manual explains the "how" and "why." You will invent many new experiments of your own. A fine research tool that will give years of beneficial service to the institution or individual who owns one. In kit form or assembled.

Kit Form\$14.95
Assembled\$19.95



A 66-inch Slide-rule for your pocket, \$19.95



Slide Rule Open

The GENIAC® Calculator carries 66-inch spiral scales yet measures only ten inches fully extended and six inches when closed. Four to five figure accuracy can be relied on. It is indispensable to the scientist, research worker and student. Administrative staff and business men will find it of tremendous value for a host of estimating and checking calculations.

The GENIAC® Slide Rule solves multiplication, division, percentage calculation and gives 5 place logarithms.

You may use it for 30 days and if you are not satisfied repack and mail it back.

What our users say:

"It does all you claim—four or five figure accuracy without eyestrain or magnifiers. Half an hour's study is ample for its use."

A. E. B.

"I use the GENIAC Calculator for all my slide rule work and need the extra digit which normal slide rules cannot give. I had to get one of my customers a GENIAC Slide Rule last month, after using mine in his office." E. & G. H. Textile Manufacturers.



Slide Rule Closed

All Equipment Protected by 10-Day Return Guarantee & 90-Day Warranty

OLIVER GARFIELD CO., INC.

Dept. SL-59-B, 108 East 16th St.,
New York 3, N. Y.

Name

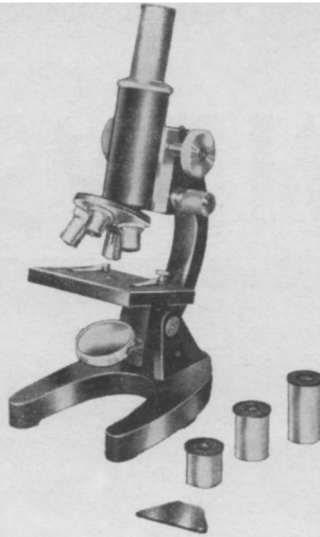
Address

Please send me the following:

Please send Check or M.O. In NYC add 3% Sales Tax.

900X "MICROBE HUNTER"

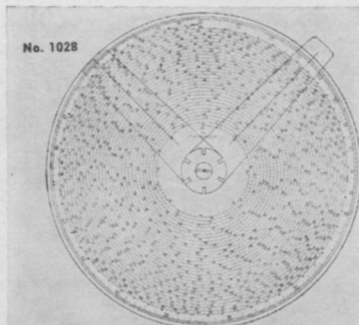
- The only Microscope in its class featuring GRADE A optics!
- Power Range 25X, 50X, 75X, 100X, 150X, 200X, 300X, 400X, 600X, 900X
- Full Range Fine Adjustment
- Safety Stop on Coarse Adjustment



This instrument—made to our rigid design specifications—has wide usage in schools, laboratories and law enforcement agencies. All of the most needed features have been incorporated to meet the requirements for diversified micro-studies. Highly recommended for serious hobbyist desiring exceptional quality at modest cost. Power range from 25X to 900X in 12 possible combinations. Gearing rack and pinion coarse focusing. Micro-motion fine focusing of full range—12 complete revolutions. Safety stop prevents over rise. 36mm dual surface (plano/concave) mirror. Fixed square stage, 70mm X 80mm. Rotating 5-hole, disc diaphragm. Three Huygenian eyepieces of 5X, 10X and 15X. Four achromatic objectives of 5X, 10X, 40X and 60X. Oversize base insures stability and protects objectives. Body tilts through 60°—perfectly balanced at any angle. Complete with upright, wooden carrying case.

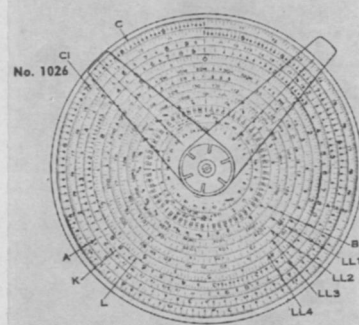
F-338—List \$69.95Net \$39.95
(Add \$1.00 for postage and handling)

CIRCULAR SLIDE RULES



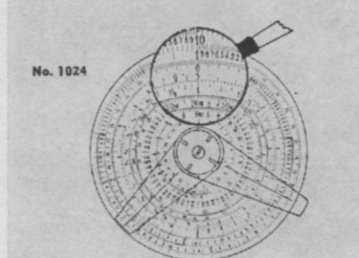
No. 1028 "ATLAS" SLIDE RULE

Made of white enameled aluminum. Diameter 8 5/16", engine divided. The outer Scale is the equivalent of a straight 25" long slide rule. The next scale is divided in equal divisions and is used for solving a few types of problems and for quickly locating any factor on the spiral. The third scale is a spiral having 30 coils and equivalent to a straight slide rule 60 feet long. The "ATLAS" is invaluable for many types of work, as it replaces the larger and more cumbersome laboratory slide rule. The "ATLAS" gives the Sines, Cosines, Tangents and Cotangents of all angles from 0 to 90° and reads to 1'. It gives the decimal equivalents of fractions to six figures. **15.95**



No. 1026 "BINARY" SLIDE RULE

Made of white enameled aluminum. Diameter 8 5/16", engine divided. It is equivalent of a 16-inch straight Log-Log rule. The C, C1, A, K and Log Scales are divided as closely as a 20 inch straight slide rule. The C Scale is over 25 inches long. The Spiral Log-Log Scale has four coils and extends from 1.0015 to 1,000,000. One setting of the BINARY will give the drill size for any size top with any thread, either V. or U.S.F. The drill size can be read in 64th, .001", M.M., and letter or numbered drill. The BINARY gives the Sines, Cosines, Tangents, Cotangents of all angles from 0 to 90° and reads to 1'. It gives the decimal equivalents of fractions to six figures. **11.95**

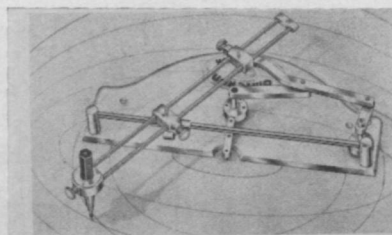


No. 1024 "MIDGET" SLIDE RULE

Made of white enameled aluminum. Diameter 4 1/4". Has eight Scales. C-Scale, C1, Addition and Subtraction Scale, Square Root, Log-Log, Binary, Fraction and Thread Scales, which can be used in combination to solve complicated problems. Solves any difficulties in multiplication, division, addition, subtraction and proportion and gives all possible roots and powers. **3.95**

No. 1022 "ALLEGHENY" SLIDE RULE

Made of durable laminated vinylite. Diameter 4 1/4". Has AB, CD, C1, G and L Scales. Can be used for multiplication, division, proportions, finding squares or square roots, cubes or cube roots, reciprocals and logarithms. Length of CD Scale is 10.8 inches long. On reverse side is a temperature conversion table, a decimal equivalent chart and a 360° protractor. **1.95**



ELLIPSOGRAPH No 750—OMICRON MODEL 17

Infinite varieties of Ellipses can be made easily, has a capacity of over 12 inches major axis and produces mathematically true ellipses with ease, speed and precision. Within its capacity all sizes, shapes and projections of ellipses may be drawn. Either pencil, inking pen or scriber needle may be inserted into the head. The most notable feature of this instrument is a linkage system which moves the cross guide pin on a straight line, thus eliminating all play and friction usually connected with straight line slides. This linkage produces not only accuracy but also unusual ease of operation. **14.95**

Special Tool Bargains-Save Up to 50%

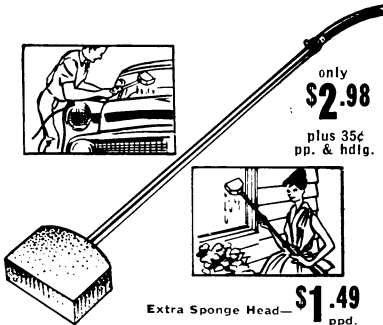
Newly Invented Automatic Window & Car Washer with CONTOURMATIC Self Adjustable Built-in SPONGE

No Mess—Not Sloppy—Saves EFFORT—TIME—WATER—MONEY . . .

"DEW-BOY" is a wonderful new washing tool with automatic action. A real handy-man. "DEW-BOY" does the washing for you without effort. The swivel-head follows the contour of cars, trucks, trailers, boats . . . glides easily over curves and protrusions . . . gets into corners of bathtubs and tiled rooms . . . reaches walls, ceilings, windows, light fixtures. Best of all, the built-in 3-stage "Valet Valve" saves trips to the faucet. Just turn on the water and sponge . . . sure fire results of shiny cleanliness is your reward. Release any second on the spot. Can't scratch.

STAGE 1—turn water on . . . it stops at sponge head
STAGE 2—a light touch, and water flows gently for washing
STAGE 3—press harder, and release torrent for rinsing

No mess of water to flood garage, kitchen, bathroom, etc. . . stops waste on your water bill.



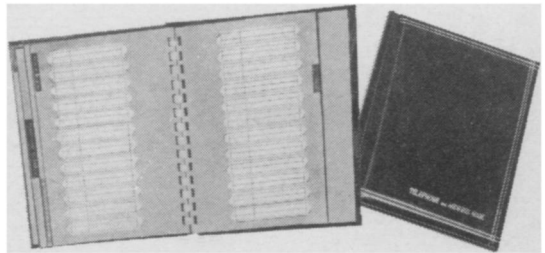
only
\$2.98
plus 35¢
pp. & hdg.

Extra Sponge Head—**\$1.49**
ppd.

MANY OTHER FEATURES:

• A long vinyl-covered aluminum handle gives you extra reach • no bristles to mat or drop out • cannot scratch delicate surfaces • weighs only ten ounces • rugged connection links up with garden hose • long-lasting sponge head—replacements available—a child can attach it.

Every Name — Every Address — Always UP-TO-DATE!



LIFETIME ADDRESS BOOK

When Changes Occur, Pull Out Old Tab . . . Insert New One!

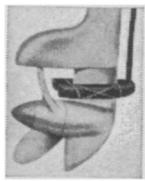
Here's just about the most practical address book ever created—a book that will never become obsolete. As a name, address or phone number changes, merely remove the old tab and insert a new one. Comes completely indexed with space and tabs for 180 up-to-date listings. Padded, leather-like spiral binder with 14 Kt. gold trim indexed pages, each holding 12 tabs PLUS 12 additional pages at back of book for listing anniversaries, birthdays, Christmas card lists, etc. Closed size is 6 1/2" X 7 7/8" X 3/4". Ideal for every home and office. 50 extra tabs with each book.

FREE! Up to 4 line gold imprint on quan. of 50 or more. Ppd. \$1.49

VACU JET AUTOMATIC BOAT BAILER

\$2.95
ppd.

Draws out 3 to 5 gallons of water a minute. Sucks out the last drop. Will not scratch or injure motor. Simple installation. No tools needed. Fits any size motor. Hooks on to the motor in a jiffy, and when motor is started, suction through the top draws water from the boat. It cleans as it bails and works like a genuine vacuum cleaner. Eliminates old fashioned hand method of bailing water. Fits easy in a tackle box. Weighs 10 ounces. Made of the finest plastic and vinyl tubing. No parts to wear or corrode. Fits any outboard motor except 3 h.p.



"Hoppy" Split-Image Transit Revolutionary LEVEL & INCLINE MEASURE



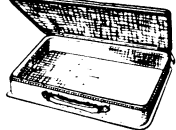
IDEAL FOR: Leveling and Grading, Road, Train, Tables, Contour Plotting, Surveying, Brick Laying, Cement Work, Surveying, Guttering, Foundation Work, Yard Grading, Plumbing, Duct Installation, Shelving, Irrigation.

This amazingly accurate instrument indicates level and measures incline down to a fraction of an inch. Makes bubble type or string levels obsolete. It not only indicates level, but shows exactly how much correction is needed. Just one person, using the split-image transit and target supplied with it, can perform any leveling, incline-measuring job quickly, easily, accurately—measures inclines down to the thinness of a dime at 25 feet. Ppd. **\$6.95**

Top-Grain-Like Leather Finish

ATTACHE CASE

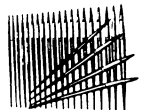
Sturdily built with heavy, long-life plastic cover. Looks just like expensive top-grain leather attache case. Easy-slide zipper on three sides of case. Heavy plastic handle is firmly attached to case with brass hardware. Measures 15 1/2" x 10 1/2" x 2 1/2" large and roomy enough to serve a multitude of uses. Ideal for businessmen, salesmen, students. Can even serve as luggage for overnight trips. **\$1.98** plus 25¢ pp. & hdg.



Full Range—Nos. 1-12 Quality Camel Hair BRUSHES

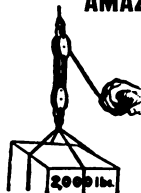
For Artists, Hobbyists, Homeowners

Superb quality brushes for every conceivable need from fine line work to broad brush strokes. You'll be amazed at the soft yet firm texture of these select brushes, each solidly set in metal grip to give years of use. Perfect for artwork, architects, touching up around the house, cleaning electrical and optical instruments and guns.



Brushes—2 ea. **\$2.00**
of nos. 1 thru 12—ppd.

AMAZING BLOCK & TACKLE



• PORTABLE . . . weighs only 13 ozs., fits in pocket!
• ONE HAND OPERATION . . .
• POWERFUL . . . lifts up to 1000 lbs.!

Amazing Work Saver for

• Hunters • Yachtmen • Truck drivers
• Farmers • Handymen • Motorists

Here's an unusual tool, even for us! It's the tiny Midget Babe Block and Tackle. It weighs only 13 oz., yet is so powerful it lifts up to 1000 lbs. easily! Because of its great strength, small size, complete portability—this block and tackle has many uses. In your car for emergencies, for home, factory, farm for loading heavy articles. For sportsmen; loading, deer, boats, etc. For anyone who has to do heavy lifting! Fine engineered throughout, best grade aluminum, steel axles, pre-lubricated for life. Hoists have two lifting slings, at top and bottom, with heavy welded steel rings. Slings can be doubled for extra strength. Complete with 70 ft. nylon cord. 5 to 1 ratio—1000 lb. test. **\$9.95** Carrying bag, instructions included. Ppd.

ALSO AVAILABLE—Tiny Babe—Lifts up to 2000 lbs.! With 100 ft. nylon cord. 7-1 ratio—2000 lb. test—15 oz. wgt. Twice as powerful as \$9.95 model—only **\$12.95** ppd. 1 yr. guarantee on both models.

Hobbyist, Handyman, Housewife, Gardener

SQUEEZ-CLIP KIT

Fixes or Fastens easier, faster, stronger than a stitch, staple, screw, nail or tie.

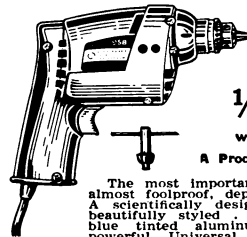


The Squeeze-Clip Kit can do so many things, you'll wonder how you ever did without it! You get a special pliers with indented slots in the jaws plus 500 assorted size galvanized, rust-resist clips. The clips, shaped like a staple, fit into the pliers. Then, just squeeze lightly and you've got a streamlined, triangular ring of a thousand uses. Use to install auto seat cover, repairs canvas tears, belts, straps, attach vines and plants to stakes and trellises, clip papers, join lengths of rope, etc. An invaluable aid to home & industry.

Only **\$1.98** plus 35¢ pp. & hdg.

IMPORTANT Order Today and Save. Minimum order \$1.00. Send Check or M.O. C.O.D. orders plus fee. Money Back Guarantee. Protects you against risk.

It's Almost Impossible to "Top" This Amazing Value!



2.6 AMP

MANNING-BOWMAN

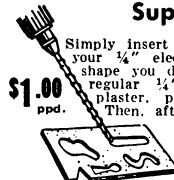
1/4" POWER DRILL

With Jacobs Geared Chuck & Key
A Product of Famed McGRAW-EDISON

The most important part of any workshop is an almost foolproof, dependable drill—and THIS IS IT! A scientifically designed and balanced unit . . . beautifully styled . . . with lightweight, durable, blue tinted aluminum diecast housing. Features powerful Universal type 1.5 Volt. A.C.D.C. motor with bronze bearings "oiled for life". Precision ground ball thrust bearing. Tailor fit grip and locking type insulated trigger switch. Powerful 2 amp. 1000 R.P.M. motor makes drilling thru hardwoods and even 1/4" thick hard metals a "cinch". Extra long, heavy duty power cord for safety and convenience. UL and CSA approved.

ONLY **\$13.95**
plus 50¢ pp. & hdg.

Drills and Saws Any Shape! Supreme Hole Saw



Simply insert the amazing Drillsaw into the chuck of your 1/4" electric drill and you're ready to cut any shape you desire. Lower portion of Drillsaw set in as regular 1/4" drill which easily bores thru wood, plaster, plastics, plywood and similar materials. Then, after penetration, the multiple keen cutting edges of the Drillsaw, cleanly and speedily cut in any direction you move. Cut circles, triangles, zig-zags, any conceivable shape you wish—in seconds!

\$1.00
ppd.

13-Pc. Set Chrome Vanadium DRILLS



in Metal Drill Index

only **\$1.88**
plus 12¢
for pp. & hdg.

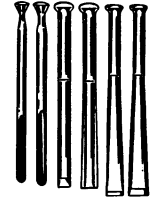
PERFECT FOR SPEED DRILLING

Just imported from West Germany, these 13 precision Chrome Vanadium Drills, from 1/16" thru 1/2" by 6 1/2" are set in a two-piece steel indexed container for easy and instant selection. Full jobber length shanks. Easily and cleanly bite through toughest steels, woods, plastics, iron and aluminum. Unconditionally guaranteed for thousands of drillings.

SAVE \$25 ON THIS UNUSED

Gov't Surplus—STAINLESS STEEL CHISEL & GOUGE SET

This 6 piece surgical steel set would ordinarily cost you \$33 or more if purchased at a regular supply house—but we're selling them to you for less than the price you would pay for ordinary chisels. These are among the finest quality tools you can buy for cutting, carving and whitening wood—designed to last a lifetime. If you could hold these gleaming, solid, heavy chromed stainless steel tools in your hands, feel their balance, their strength, you'd know this is a fabulous, once-in-a-lifetime bargain.

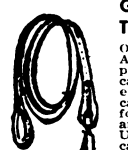


\$7.98
ppd.

Gov't Surplus WEBBED TOW CABLE

Originally made for U. S. Air Force. Never used. Test proven for towing trucks, cars, etc. 15 ft. long with extra heavy duty spring snap cable 3/4" wide. Nylon reinforced cable is 1/4" thick and 1 3/4" wide at ends. Useful at home or keep in car for emergencies.

\$1.95 plus 35¢ pp. & hdg.



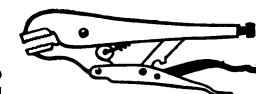
CONTOUR SCRIBER



Permits professional fitting of linoleum tile, wood, plastic and sheet metal floors and walls. Obstructions and difficult cutting such as ground pipes, cabinets, door sills, frames, etc., simply and quickly overcome without removing any molding. Sturdy, heavy metal construction, adjustable, 123 1/4" parallel and irregular surfaces are perfectly matched. **\$1.00** ppd.

10" F-VISE SAFETY WRENCH

1 ton tested, non-slip grip . . . yet releases at a FLICK of the finger.



Safe! No more skinned or bruised knuckles! Whether working in an almost inaccessible place, or out in the open, the 2,000 pound tested, non-slip grip of this all-purpose wrench can be released with a flick of the finger. Made of high grade alloy steel, with heat treated jaws, work above or below. **\$1.79** of any size up to 1 3/4" can be held securely. plus 21¢ pp & hdg.

SCOTT-MITCHELL HOUSE, Inc.

Dept. 2405—415 South Broadway, Yonkers, N. Y.

Kodak reports on:

who can tell you how to speed up time . . . electronics through joy . . .
how to prevent a pile of fish from catching fire

Months to seconds

A *Cine-Kodak Special Camera* made most of the movies you have ever seen of a bean developing into a bean plant or a cow pasture developing into a steel plant. The *Cine-Kodak K-100 Camera*, which lists from \$299, can likewise be adapted for this technique. No great resources in mechanical skills or facilities are demanded.

Mr. Fred O'Brien, Eastman Kodak Company, 400 Plymouth Avenue North, Rochester 4, N. Y., can tell you how to go about it.

TV—rugged and sophisticated



Logic and reason connect this happy scene of commerce with our claim to be putting together the western world's most rugged and sophisticated television apparatus.

Loath to fight World War III in an ad (though this may not be a bad place to fight it, personal safety considered), we do not here detail functions, specifications, or potentialities of such apparatus as we have already created. It suffices to generalize from the concept that to place a living human eye at the payoff end of an intricate and talented optical device may be inconvenient and unwise. Where the environment is too violent for the eye, we have developed a knack for substituting a television camera.

This calls for cameras which a TV actor would scarcely recognize, nor are they as simple as those which read boxcar numbers in remote corners of railroad yards. We take pickup tubes (drinking deep draughts of the knowl-

edge of their manufacturers, just as they are welcome to milk us when it comes to photography) and festoon the tubes with electronic circuitry, optical elegance, and precision-mechanical musculature—all neatly woven together. The whole we put in small packages. We can make the packages do their duty gracefully under 15 g's of shock and 145 db of acoustic energy in each octave to 20,000 cycles/sec for x minutes at 200°F or y hours at -65°F after z months of storage at -80°F.

How did we happen to get electronically involved? Well, the biggest part of our business has always been ways and means of presenting an image to the eye. Electronics engineers we have in goodly numbers on such projects as machines that take a very quick look at a Kodacolor negative and instantly reach a complicated decision on how to vary some colored light beams to bring the greatest joy to the lady calling for her Kodacolor Prints. With what such machines cost, they have to work when you turn them on. Like virtue, reliability becomes its own reward. This viewpoint our electronics engineers must quickly acquire.

Another corps of Kodak electronics engineers bring to TV-systems development the experience of packaging radio transmitters and receivers to work inside artillery shells. This, too, we got into from catering to the public's photographic desires. The armed forces had figured that an outfit capable of flooding the world with accurately timed photographic shutters could do as well with artillery fuzes. Later, when fuzes came to be operated by radio echoes instead of clockwork, what was more natural than that we make that kind?

If you have some business to discuss about rugged and sophisticated electronics, get in touch with Eastman Kodak Company, Apparatus and Optical Division, Rochester 4, N. Y.

Defense from oxygen

A can of sardines provides excellent protein for a field hand's lunch in the cotton country and a livelihood for a Maine man who would rather work on a herring seiner than a gas station. The applecart, however, is tipping a little. The field hand's wife can now often

afford to slip a chicken sandwich into the lunch pail.

While the herring seiners go looking for gourmets to eat their catch, other fishermen are setting their seines for *Brevoortia tyrannus*, the fish the Pilgrim saw the Indian drop into the hole with the corn kernels, the most abundant of Atlantic coast fishes, ignored by cookbooks, the menhaden. To get it into the field hand's lunch pail, it is converted into chicken muscle tissue.

This complex process requires cooking the menhaden at a temperature below 180°F (which will coagulate and separate the protein but not degrade it); then squeezing, drying, and grinding the stew, adding it to corn and other agricultural and mineral products, and feeding the mixture to chickens. The drying step is critical. If oxidation of the fish fat gets out of hand, not only may the protein and vitamins be destroyed, but fire may break out.

This we have set about to prevent. To assure ourselves of a good supply of photographic developer, we long ago set up to make phenolic reducing agents in large quantity. We made so much that we had to find other markets. The difference between a reducing agent and an antioxidant is a mere technicality. One of our antioxidants, butylated hydroxytoluene, has long been accepted by competent and critical authorities as safe even for direct human food, at the proper levels. As *Tenox BHT—Agricultural Grade*, we are now selling it to the fish meal people. It saves them money. Their 40-ton piles of fish scrap require less costly shifting to keep them cool. A week is reported to have been cut off the curing time.

*Even if you have no 40-ton piles of fish in the sun, Eastman Chemical Products, Inc., Kingsport, Tenn. (Subsidiary of Eastman Kodak Company), would love to talk to you about deceleration of oxidation on the grand scale. Incidentally, the closely allied Gulf of Mexico menhaden, *Brevoortia patronus*, poses less of a self-heating problem. We wonder why.*

Price stated is subject to change without notice.

This is another advertisement where Eastman Kodak Company probes at random for mutual interests and occasionally a little revenue from those whose work has something to do with science

Kodak
TRADE MARK